

REMARKS

I. Rejections under 35 USC §102

Claims 1, 4, 7, 11-12, 15, 23-25 and 30 are rejected as being anticipated by Mulier et al. (US 5,906,613). The '613 Mulier discloses an ablation catheter for mapping and ablating tissue with RF energy. '613 Mulier is not directed to stimulating electrode for myocardial tissue. The catheter is illustrated in Fig. 7 and a cutaway view of its distal end is shown in Fig. 10.

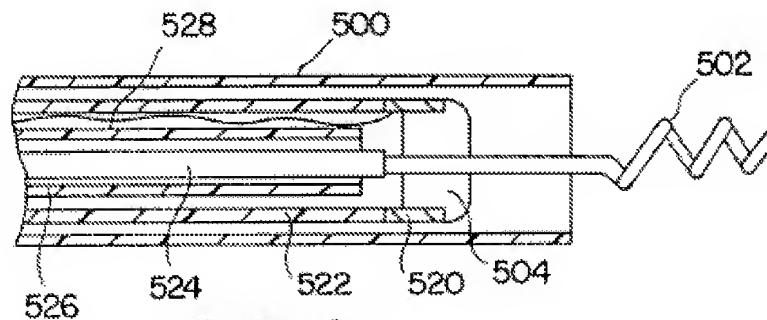


FIG. 10

The distal end has a hollow, needle-like, helical electrode 502 supplied with a conductive fluid through tube 524. A tube 522 surrounds tube 524 and defines a fluid flow path for "return flow" for fluid that passes through the annulus between tube 526 and tube 524. A plastic plug 504 seals the end of tube 522. A ring electrode 520 is fitted to plug 504. Electrode 520 is coupled to tissue by conductive fluid discharged through the annulus between tube 500 and tube 522.

According to the office action, electrode 502 provides a first electrode and electrode 520 provides a second electrode. Further, the tube 524 is identified as a conductor coupled to electrode 502 and tube 500 is identified as a sheath. Further, the office action identifies plug 504 as being a distal end wall defining a

closed cavity within tube 522 and having a port through which electrode 502 extends.

According to the characterization of '613 Mulier in the office action, the "cavity" is proximal of the end wall said to be established by the surface of plug 504 that faces conductor 524. However, the claims clearly specify that the conductive structure that forms a closed cavity is "distal" of the distal end wall of the elongated body. The '613 Mulier structure, therefore, by admission in the office action, fails to anticipate 1, 4, 7, 11-12, 15, 23-25 and 30.

In addition, while the office action identifies two electrodes, electrodes 502 and 520, the claims specify a conductive structure having first and second electrode surfaces. Moreover, the claims specify that the first electrode structure encloses the cavity. First electrode 502 in '613 Mulier is outside the identified cavity formed by plug 504 and tube 522. To the extent there is a relationship between that cavity and electrode 502, the relationship has the cavity enclosing a portion of electrode 502, which is inapposite to the claim recitation. Yet further, the claims specify that it is the port formed in the insulative housing around the conductive structure that defines a second electrode surface. In '613 Mulier, the surface of the second electrode 520 is defined by the configuration of the "ring" electrode itself and not by the alleged "port" in plug 504 through which the shaft of electrode 502 extends.

The office action also notes that conductive solution is dispensed from the helix and thus the solution is intimate contact with the surface of the first electrode. Such an arrangement places the solution outside what has been identified in the office action as the cavity, i.e., the volume formed within tube 522 by plug 504. Thus, the point made in the office action is irrelevant because the claim specifies that the conductive fluid medium is inside the cavity.

Applicant would further point out that, as seen in Fig. 10, electrode 520 forms an extension of the tube 522. Plug 504 overlaps a majority of the length of ring electrode 504. Thus, to the extend plug 504 forms a cavity, that cavity is not defined by a conductive structure.

In addition, the office action in identifying helical electrode 502 as a first electrode attempts to address the claim limitation that the helical fixation member is "insulated." The office action points to column 6, lines 11-16 of '613 Mulier. There, however, the disclosure in '613 Mulier makes it absolutely clear that it is only the "proximal portion" of the electrode that is covered by an insulative sleeve. Accordingly, '613 Mulier does not in fact teach an insulated helical fixation member.

The fundamental flaw in the analysis set forth in the office action is a failure to properly construe the claim language to specify a structure as depicted, for example, in the drawings of Figs. 1A and 1B, wherein a conductive structure has a first electrode surface that is an inner surface and a second electrode surface that is an outer surface. Applicant believes that the claim language as properly construed distinguished over the structure shown in Fig. 10 of the '613 Mulier reference. This flaw is carried over into the comments in the office action as to the current density in '613 Mulier. The office action applies an approach that current density is current flow divided by area. The analysis then proceeds to find that the solution dispensed from the helix contributes to a larger conductive area around the helix. The discussion, however, fails to account for the fact that ring electrode 520 is also coupled to tissue by conductive fluid. See col. 9, lines 28-34. This is merely a contrived approach in an attempt to find a correspondence with the claim limitation that the current density at the first electrode surface is smaller than the current density at the second electrode surface. The analysis in the office action, however, is conspicuously misdirected in that the claim specifies a smaller current density "at the first electrode surface," and not within the surrounding tissue. As illustrated in Fig. 1A, and as described in paragraphs [0012] through [0014], the difference in current density accrues by reason of port 113 circumscribing a second electrode surface area sized to produce a relatively high current density.

Applicant submits that '613 Mulier fails to anticipate claims 1, 4, 7, 11-12, 15, 23-25 and 30. The rejection of those claims should be withdrawn.

II. Rejections under 35 USC §103

Claims 10, 14, 17-20, 22, 28-29 and 31-34 are rejected as being unpatentable for obviousness over '613 Mulier in view of Gates (US 5,408,744).

Claims 3, 8 and 16 are rejected as being unpatentable for obviousness over '613 Mulier in view of Peterfeso (US 6,298,272).

Claims 21 and 35 are rejected as being unpatentable for obviousness over '613 Mulier in view of Altman (US 6,086,582).

Each of these rejected claims is a dependent claim. Also, each of the rejections is predicated on a characterization of '613 Mulier and application of it against the independent claims as set forth in the anticipation rejection. As pointed out above, the anticipation rejection necessarily fails. As a consequence, the obviousness rejections predicated on '613 Mulier anticipating the independent claims also necessarily fails.

Applicant submits that '613 Mulier in combination with one or more of Gates, Peterfeso and Altman fails to render obvious claims 10, 14, 17-20, 22, 28-29 and 31-34; claims 3, 8 and 16; and claims 21 and 35. The rejection of those claims should be withdrawn.

III. Conclusion

In view of the foregoing remarks, Applicant submits that all claims distinguish over the prior art and are non-obvious. Applicant respectfully requests that a notice of allowance be issued in due course.

Respectfully submitted,

November 14, 2006
Date

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